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## THE INFLUENCE OF THE TEMPERATURE OF PRECIPITATION ON THE OXYGEN ISOTOPE COMPOSITION OF CARBONATES

R. V. Teys

 $/\overline{ ext{T}}$ his report was presented by the author at the 1950 Annual Scientific Meeting of the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR.

The results described in this paper can be used in procedures aiming at artificial concentration of the heavy oxygen isotope 018.7

In the precipitation of carbonates from natural waters, a distribution of 0<sup>18</sup> between the carbonate and the water is established which leads to enrichment of 0<sup>18</sup> in the carbonate. The degree of this enrichment depends on the temperature of precipitation: the lower the temperature, the greater the enrichment. The existence of this temperature dependence permits a determination of the temperature of the carbonate's formation on the basis of its oxygen isotope composition.

It was established that this method can be applied to various types of carbonates, including those deposited from hot springs. It was shown that carbonates which were deposited from hot springs and therefore had a high temperature of formation, exhibited a considerably lower content of 010 than carbonates deposited at ordinary temperatures. Furthermore, it was found that calcites derived from various hot spring deposits, but formed at the same temperature, have a similar oxygen isotope composition.

A further refinement of the method will permit a determination of the temperature of carbonate formation with a precision of 7-8° for low-temperature carbonates and 12-130 for high-temperature carbonates. Carbonates which have not been precipitated from water do not show the same temperature relationship of the oxygen isotope composition: notwithstanding the higher temperature of their formation, they contain more Old than carbonates deposited from hot springs.

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